

Final Technical Report for the Project:
**ASSERT: Observation and prediction of the nonlinear evolution of
shoaling surface gravity waves, N00014-95-1-0730**

The two graduate students supported by this AASERT project completed their studies and were awarded PhDs. Dr. Barry Vanhoff received a PhD from Washington State University for his studies of techniques to simulate time series of nonlinear ocean surface waves. He showed that nonlinear interactions can lead to longer groups of high waves than expected from linear theory. Using data from ONR-supported field experiments, Dr. Vanhoff demonstrated that his simulation technique modeled wave groups observed in intermediate and shallow water. Dr. Vanhoff is now a research assistant in Dr. M. Freilich's laboratory at Oregon State University. Dr. Vanhoff is working with signal processing of scatterometer data from the ADEOS satellite to investigate winds and waves over the global ocean.

Dr. Edith Gallagher received a PhD from the Scripps Institution of Oceanography for her studies of nearshore morphology. She showed that during storms sand bars are driven offshore by transport of suspended sediment by strong mean cross-shore directed currents. Her research has continued during her post doctoral studies at the Naval Postgraduate School with Dr. E. Thornton. Dr. Gallagher has been investigating seafloor bedforms in the nearshore observed during ONR-sponsored field experiments at Duck, North Carolina. As part of this ASSERT funding Dr. Gallagher helped develop a sonar altimeter for use in the surf zone that is being used by several research laboratories in the US and in Europe.

ONR-Sponsored Refereed Publications Written by the AASERT Students

Chandran, V., Steve Elgar, and B. Vanhoff, 1994 Statistics of tricoherence IEEE Signal Processing **42**, 3430-3440.

Vanhoff, B. and Steve Elgar, 1997 Simulating quadratically nonlinear random processes, International J. Bifurcation and Chaos **7**, 1367-1374.

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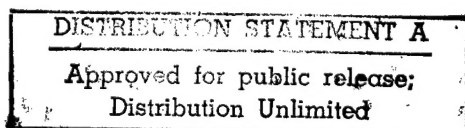
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Gallagher, Edith, B. Boyd, Steve Elgar, R.T. Guza, B.T. Woodward, 1996 Performance of a sonar altimeter in the nearshore, Marine Geology **133**, 241-248.

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Gallagher, E., S. Elgar, and R. T. Guza, Observations of migrating megaripples, *Eos Trans. AGU* **77**, 387, 1996.

Gallagher, E., S. Elgar, and R. T. Guza, 1995 Observations of bathymetric evolution during Duck94, *Coastal Dynamics '95*, Gdansk, 46-50.

Gallagher, E. L., S. Elgar, and R. T. Guza, 1996 Observations and predictions of sand bar motion, 25th Intl. Conf. on Coastal Engineering, Amer. Soc. Civil Eng., Orlando, 78-79.

Vanhoff, B., S. Elgar, and R. T. Guza, Numerically simulating nonGaussian sea surfaces, *Eos Trans. AGU* **77**, 394, 1996.

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13. ABSTRACT (Maximum 200 words) The two graduate students supported by this AASERT project completed their studies and were awarded PhDs. Dr. Barry Vanhoff received a PhD from Washington State University for his studies of techniques to simulate time series of nonlinear ocean surface waves. He showed that nonlinear interactions can lead to longer groups of high waves than expected from linear theory. Using data from ONR-supported field experiments, Dr. Vanhoff demonstrated that his simulation technique modeled wave groups observed in intermediate and shallow water. Dr. Edith Gallagher received a PhD from the Scripps Institution of Oceanography for her studies of nearshore morphology. She showed that during storms sand bars are driven offshore by transport of suspended sediment by strong mean cross-shore directed currents. As part of this ASSERT funding Dr. Gallagher helped develop a sonar altimeter for use in the surf zone that is being used by several research laboratories in the US and in Europe.				
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